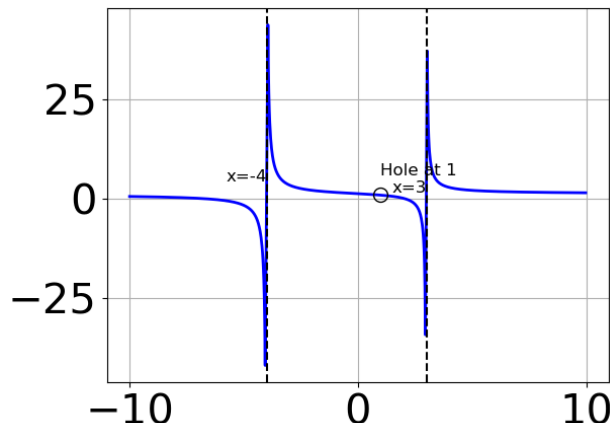


1. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 + 10.0x^2 + 11.0x - 70.0}{x^3 - 13.0x + 12.0}$
- B. $f(x) = \frac{x^3 + 4.0x^2 - 19.0x + 14.0}{x^3 - 13.0x + 12.0}$
- C. $f(x) = \frac{x^3 + x^2 - 44.0x - 84.0}{x^3 - 13.0x - 12.0}$
- D. $f(x) = \frac{x^3 - 4.0x^2 - 19.0x - 14.0}{x^3 - 13.0x - 12.0}$
- E. None of the above are possible equations for the graph.

2. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 - 41x^2 + 44x - 15}{4x^2 + 9x - 9}$$

- A. Horizontal Asymptote of $y = -3.0$ and Oblique Asymptote of $y = 3x - 17$
- B. Horizontal Asymptote of $y = 3.0$
- C. Oblique Asymptote of $y = 3x - 17$.
- D. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 17$
- E. Horizontal Asymptote at $y = -3.0$

3. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{9x^3 + 9x^2 - 16x - 16}{12x^2 - 25x + 12}$$

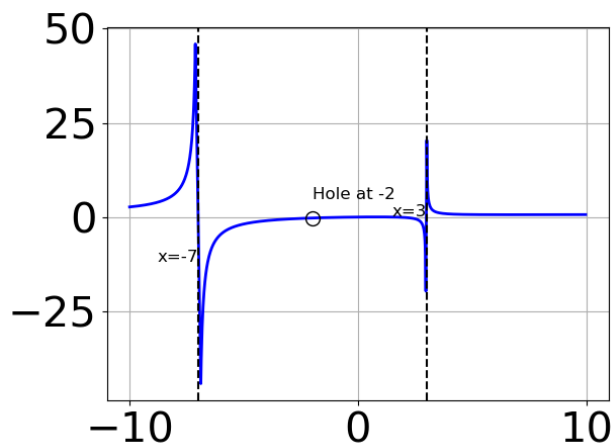
- A. Vertical Asymptote of $x = 0.75$ and hole at $x = 1.333$
 - B. Vertical Asymptotes of $x = 0.75$ and $x = -1.333$ with a hole at $x = 1.333$
 - C. Vertical Asymptotes of $x = 0.75$ and $x = 1.333$ with no holes.
 - D. Holes at $x = 0.75$ and $x = 1.333$ with no vertical asymptotes.
 - E. Vertical Asymptote of $x = 0.75$ and hole at $x = 1.333$
-

4. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^2 - 7x - 10}{18x^3 - 87x^2 + 35x + 100}$$

- A. Horizontal Asymptote of $y = 0.333$ and Oblique Asymptote of $y = 3x - 11$
 - B. Horizontal Asymptote of $y = 0.333$
 - C. Horizontal Asymptote of $y = 0$
 - D. Oblique Asymptote of $y = 3x - 11$.
 - E. Horizontal Asymptote at $y = 2.000$
-

5. Which of the following functions *could* be the graph below?



A. $f(x) = \frac{x^3 - 6.0x^2 + 3.0x + 10.0}{x^3 + 6.0x^2 - 13.0x - 42.0}$

B. $f(x) = \frac{x^3 - 1.0x^2 - 4.0x + 4.0}{x^3 - 6.0x^2 - 13.0x + 42.0}$

C. $f(x) = \frac{x^3 + x^2 - 4.0x - 4.0}{x^3 + 6.0x^2 - 13.0x - 42.0}$

D. $f(x) = \frac{x^3 - 2.0x^2 - 5.0x + 6.0}{x^3 - 6.0x^2 - 13.0x + 42.0}$

E. None of the above are possible equations for the graph.

6. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^2 - 7x - 10}{24x^3 + 74x^2 - 9x - 45}$$

A. Horizontal Asymptote at $y = 2.000$

B. Horizontal Asymptote of $y = 0.250$

C. Horizontal Asymptote of $y = 0.250$ and Oblique Asymptote of $y = 4x + 17$

D. Horizontal Asymptote of $y = 0$

E. Oblique Asymptote of $y = 4x + 17$.

7. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 - 43x^2 + 91x - 60}{9x^2 - 21x + 10}$$

- A. Vertical Asymptotes of $x = 0.667$ and $x = 1.5$ with a hole at $x = 1.667$
 - B. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.667$
 - C. Vertical Asymptotes of $x = 0.667$ and $x = 1.667$ with no holes.
 - D. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.667$
 - E. Holes at $x = 0.667$ and $x = 1.667$ with no vertical asymptotes.
-

8. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{8x^3 - 2x^2 - 43x + 30}{6x^2 + 11x - 10}$$

- A. Vertical Asymptote of $x = 1.333$ and hole at $x = -2.5$
 - B. Vertical Asymptote of $x = 0.667$ and hole at $x = -2.5$
 - C. Vertical Asymptotes of $x = 0.667$ and $x = -2.5$ with no holes.
 - D. Vertical Asymptotes of $x = 0.667$ and $x = 0.75$ with a hole at $x = -2.5$
 - E. Holes at $x = 0.667$ and $x = -2.5$ with no vertical asymptotes.
-

9. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 17x^2 - 3x - 20}{6x^2 + 11x - 10}$$

- A. Vertical Asymptote of $x = 0.667$ and hole at $x = -2.5$
- B. Vertical Asymptotes of $x = 0.667$ and $x = -2.5$ with no holes.
- C. Holes at $x = 0.667$ and $x = -2.5$ with no vertical asymptotes.
- D. Vertical Asymptote of $x = 1.0$ and hole at $x = -2.5$

- E. Vertical Asymptotes of $x = 0.667$ and $x = -1.333$ with a hole at $x = -2.5$
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10. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{9x^3 - 9x^2 - 46x - 24}{3x^2 + 16x + 16}$$

- A. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 19$
- B. Horizontal Asymptote of $y = 3.0$
- C. Oblique Asymptote of $y = 3x - 19$.
- D. Horizontal Asymptote of $y = -4.0$ and Oblique Asymptote of $y = 3x - 19$
- E. Horizontal Asymptote at $y = -4.0$
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